

SEQUENCE LISTING

<110> Inouye, Masayori
Zhang, Junjie
Zhang, Yong Long
Qing, Guoliang
Suzuki, Motoo

<120> mRNA Interferases and Methods of Use Thereof

<130> University of Medicine & Dentistry of New Jersey (601-1-131PCT)

<140> Not yet assigned
<141> 2004-06-14

<150> 60/543,693
<151> 2004-02-11

<150> 60/478,515
<151> 2003-06-13

<160> 92

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<211> 336
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<213> E. coli

<400> 1

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aaaggttagcg agcaagctgg acatcgtcca gctgttgtcc tgagtccctt catgtacaac 120
aacaaaaacag gtatgtgtct gtgtgttccct tgtacaacgc aatcaaaaagg atatccgttc 180
gaagttgttt tatccggtca ggaacgtgat ggcgttagcgt tagctgatca ggtaaaaagg 240
atccgcctggc gggcaagagg agcaacgaag aaaggaacag ttgccccaga ggaattacaa 300
ctcattaaag ccaaattaa cgtactgatt gggtag 336

<210> 2

<211> 111
<212> PRT
<213> E. coli

<400> 2

Met Val Ser Arg Tyr Val Pro Asp Met Gly Asp Leu Ile Trp Val Asp
1 5 10 15
Phe Asp Pro Thr Lys Gly Ser Glu Gln Ala Gly His Arg Pro Ala Val
20 25 30
Val Leu Ser Pro Phe Met Tyr Asn Asn Lys Thr Gly Met Cys Leu Cys
35 40 45
Val Pro Cys Thr Thr Gln Ser Lys Gly Tyr Pro Phe Glu Val Val Leu
50 55 60
Ser Gly Gln Glu Arg Asp Gly Val Ala Leu Ala Asp Gln Val Lys Ser
65 70 75 80
Ile Ala Trp Arg Ala Arg Gly Ala Thr Lys Lys Gly Thr Val Ala Pro
85 90 95
Glu Glu Leu Gln Leu Ile Lys Ala Lys Ile Asn Val Leu Ile Gly
100 105 110

<210> 3
<211> 333
<212> DNA
<213> E. coli

<400> 3

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gaaacgcgac cggtgcgtat tgcacaccg gcggccctta atcgcgtgac ccgcctgct 120
gttgtgtgc ccgttaaccag cggaggcaat ttggcccgca ctgcccgtt tgcgggtgcg 180
ttggatgggtt ttggcatacg taccacaggt gttgtacgtt gcgatcaacc ccggacaatt 240
gatatgaaag cacggggcgg aaaacgactc gaacgggttc cggagactat catgaacgaa 300
gttctggcc gcctgtccac tattctgact tga 333
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<210> 4
<211> 110
<212> PRT
<213> E. coli

<400> 4

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Met Glu Arg Gly Glu Ile Trp Leu Val Ser Leu Asp Pro Thr Ala Gly
1 5 10 15
His Glu Gln Gln Gly Thr Arg Pro Val Leu Ile Val Thr Pro Ala Ala
20 25 30
Phe Asn Arg Val Thr Arg Leu Pro Val Val Val Pro Val Thr Ser Gly
35 40 45
Gly Asn Phe Ala Arg Thr Ala Gly Phe Ala Val Ser Leu Asp Gly Val
50 55 60
Gly Ile Arg Thr Thr Gly Val Val Arg Cys Asp Gln Pro Arg Thr Ile
65 70 75 80
Asp Met Lys Ala Arg Gly Gly Lys Arg Leu Glu Arg Val Pro Glu Thr
85 90 95
Ile Met Asn Glu Val Leu Gly Arg Leu Ser Thr Ile Leu Thr
100 105 110
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<210> 5
<211> 249
<212> DNA
<213> E. coli

<400> 5

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ttaatgcagg cgctcaatct gaatattgtat gatgaagtga agattgacct ggtggatggc 120
aaattaatta ttgagccagt gcgtaaagag cccgtattta cgcttgctga actggtaaac 180
gacatcacgc cggaaaacctt ccacgagaat atcgactggg gagagccgaa agataaggaa 240
gtctggtaa 249
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<210> 6
<211> 82
<212> PRT
<213> E. coli

<400> 6

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1 5 10 15
Ile Pro Ala Thr Leu Met Gln Ala Leu Asn Leu Asn Ile Asp Asp Glu
20 25 30
Val Lys Ile Asp Leu Val Asp Gly Lys Leu Ile Ile Glu Pro Val Arg
35 40 45
Lys Glu Pro Val Phe Thr Leu Ala Glu Leu Val Asn Asp Ile Thr Pro
50 55 60
Glu Asn Leu His Glu Asn Ile Asp Trp Gly Glu Pro Lys Asp Lys Glu
65 70 75 80
Val Trp
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<210> 7
<211> 258
<212> DNA
<213> E. coli

<400> 7

atgcataccca cccgactgaa gagggttggc ggctcagttt tgctgaccgt cccaccggca 60
ctgctgaatg cgctgtctct gggcacagat aatgaagttt gcatggtcat tgataatggc 120
cggtctgattt tttagccgta cagacgccccg caatattcac tggctgagct actggcacag 180
tgtgtatccga atgctgaaat atcagctgaa gaacgagaat ggctggatgc accggcgact 240
gttcaggagg aaatctga 258

<210> 8
<211> 85
<212> PRT
<213> E. coli

<400> 8

Met His Thr Thr Arg Leu Lys Arg Val Gly Gly Ser Val Met Leu Thr
1 5 10 15
Val Pro Pro Ala Leu Leu Asn Ala Leu Ser Leu Gly Thr Asp Asn Glu
20 25 30
Val Gly Met Val Ile Asp Asn Gly Arg Leu Ile Val Glu Pro Tyr Arg
35 40 45
Arg Pro Gln Tyr Ser Leu Ala Glu Leu Leu Ala Gln Cys Asp Pro Asn
50 55 60
Ala Glu Ile Ser Ala Glu Glu Arg Glu Trp Leu Asp Ala Pro Ala Thr
65 70 75 80
Gly Gln Glu Glu Ile
85

<210> 9
<211> 24
<212> PRT
<213> Artificial Sequence

<220>

<223> T54 to K77 fragment of E. coli MazE

<400> 9

Thr Leu Ala Glu Leu Val Asn Asp Ile Thr Pro Glu Asn Leu His Glu
1 5 10 15
Asn Ile Asp Trp Gly Glu Pro Lys
20

<210> 10
<211> 18
<212> PRT
<213> Artificial Sequence

<220>

<223> N60 to K77 fragment of E. coli MazE

<400> 10

Asn Asp Ile Thr Pro Glu Asn Leu His Glu Asn Ile Asp Trp Gly Glu
1 5 10 15
Pro Lys

<210> 11
<211> 30
<212> RNA
<213> Artificial Sequence

<220>
<223> synthetic RNA substrate

<400> 11
uaagaaggag auauacauau gaaucaaauc 30

<210> 12
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> single stranded oligonucleotide

<400> 12
gctcgatatct acaatgtaga ttgatatactat ctgtatctac atatgatagc 50

<210> 13
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> single stranded oligonucleotide

<400> 13
cgagcataga tgttacatct aactatataat gacatagatg tatactatcg 50

<210> 14
<211> 23
<212> DNA
<213> Artificial Sequence

<400> 14
agatctcgat cccgcaaatt aat 23

<210> 15
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 15
ttagagatca atttcctgcc gttttac 27

<210> 16
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 16
ttaaagatcg tcaacgtaac cg 22

<210> 17
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 17
tgctctttat cccacgggca gc 22

<210> 18
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 18
gcccgaggta ccgcgaagat cgtc 24

<210> 19
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 19
gtttttgatt tgctccaaac gggcaag 27

<210> 20
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 20
catttcctcc tccagtttag cctggtc 27

<210> 21
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 21
ttgccagact tcttccattg ttgcag 27

<210> 22
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 22
gatccccaca atgcggtgac gagt 24

<210> 23
<211> 24
<212> DNA
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<220>
<223> DNA primer

<400> 23
cacgttgtcc actttgttca ccgc 24

<210> 24
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 24
cagttcagcg ccgaggaaac gcat 24

<210> 25
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 25
gcgttcgtcg tcggcccaac cgga 24

<210> 26
<211> 30
<212> RNA
<213> Artificial Sequence

<220>
<223> antisense RNA

<400> 26
gauugauuc auauguaau cuccuucua 30

<210> 27
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> complementary DNA

<400> 27
gatttgattc atatgtatat ctccttctta 30

<210> 28
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 28
agaatgtgcg ccattttca ct 22

<210> 29
<211> 9
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA fragment

<400> 29
taatacacacc 9

<210> 30
<211> 15
<212> DNA
<213> Artificial Sequence

<400> 30
atgaatcaca aagtg 15

<210> 31
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA fragment

<400> 31
catcatcatc atcatcat 18

<210> 32
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA fragment

<400> 32
atcgaaggta gg 12

<210> 33
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> multiple cloning site

<400> 33
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<210> 34
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 34
caggagauac cucaaugauc a 21

<210> 35
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 35
ctcaatgatc acaggagata c 21

<210> 36
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 36
tcctctatgg agttactagt g 21

<210> 37
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 37
gggacaggag atacct 16

<210> 38
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> DNA primer

<400> 38
tgcctctat ggagttacta gtg 23

<210> 39
<211> 330
<212> DNA
<213> *Bacillus halodurans*

<400> 39
atgccatgtac cggatagagg gaatcttgg ttatgtact ttaaccaca atcggtcat 60
gaccaagccg ggacacgacc ggctattgtt ttgtccccta aattatttaaa taaaaacaca 120
ggttttgcgg tggttgtcc aattaccaga caacaaaaag gttatcctt tgaatagaa 180
ataccaccgg gttacctat tgaaggggtt attcttactg accaagtaaa aagtctggat 240
tggagagcaa gaaactttca cattaaagga caagcaccag aggaaactgt tactgattgt 300
ttacaactta ttcatatcatt ttatcttaa 330

<210> 40
<211> 363
<212> DNA
<213> *Staphylococcus epidermidis*

<400> 40
atgatttagaa gaggagatgt ttatgtacg gatttacac cagttcaagg gtctgaacaa 60
gggggagtaa gacctgttagt tatttttcaaa aatgtatactg gtaataaata tagtccaact 120
gtaattgttag ctgcgattac tgatggatt aataaagcga aaataccaaac ccacgtagaa 180

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attgaaaaga aaaagtataa attagacaaa gattcagtta ttcttcttga acaaattaga 240
 acactagata aaaagcggtt aaaagaaaaa ttaacatttt tatcagagag taaaatgata 300
 gaggttgata atgccttaga tattagttt ggattaaata actttgatca tcataaatct 360
 taa
 363

<210> 41
<211> 411
<212> DNA
<213> *Staphylococcus aureus*

<400> 41
atgatttagac gaggagatgt ttathtagca gatttacac cagtaggg atctgaacaa 60
gggggagtca gacctgtgt cataattcaa aatgatactg gtaataaaata tagtcctaca 120
gttattgttgcggcaataac tggtaggatt aataaagcga aaataccgac acatgttagag 180
attgaaaaga aaaagtataa gttggataaaa gactcagtta tattattaga acaaatttgt 240
acacttgata aaaaacgatt gaaagaaaaa ctgacgtact tatccgatga taaaatgaaa 300
gaagtagata atgcactaat gattagttt gggctgaatg cagtagctca accagaaaaa 360
ttaggcgtcttattatgtat ttttcagag ataaaataaaa tattgatata a 411

<210> 42
<211> 351
<212> DNA
<213> *Bacillus subtilis*

<400> 42
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caaggcgggg tgcggccgggt ttttagtgcata caaaatgaca tcggaaatcg cttcagccca 120
actgcttattgttgcagccat aacagcacaa atacagaaaag cgaaattacc aaccacggtc 180
gaaatcgatg caaaaacgcta cggttttgaa agagattccg ttatttgtct ggagcaaatt 240
cgacgatttgc acaagcaaag gttAACGGAT aagattactc atctggatga tggaaatgatg 300
gataaggttgc atgaagcctt acaaatcagt ttggcactca ttgattttta g 351

<210> 43
<211> 324
<212> DNA
<213> *Neisseria meningitidis*

<400> 43
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gaaatcaaaa agacacgtcc ttgtgtcgta gtctctcctc ctgaaataca caactatctc 120
aagactgtgc tgatcggtcc catgacgagc ggaagccgtc ctgcccgtt ccgcgtcaat 180
gtccgctttc aggataaaaga cggtttgc ttgcccgaac agattagggc tggataaaa 240
gccggatttgc tcaaacatct tggcaattta gacaacagta cggctgaaaaa actgtttgca 300
gtattgcagg agatgttgc ctga 324

<210> 44
<211> 366
<212> DNA
<213> *Morganella morgani*

<400> 44
atgcgcggc ggctggtcag gaggaaatct gacatggaaa gagggggaaat ctggcttgc 60
tcgttgcacc ctaccgcagg tcatgagcag cagggAACGC ggccgggtact gattgtcagc 120
ccggctgttgc ttaacccgtt gacccgcctt cctgttgc ttgcccgttgc cagcggagg 180
aattttgtcc gcacacgagg ctttgcgttgc tcgcgttgc acgttaccacc 240
ggcgttgc gttgcgttgc accccgacg atcgatatga aagccgcgg cggcaaacga 300
ctcgaacggg tgccagagac tatcatggac gacgttcttgc gccgttgc caccatcctg 360
acctga 366

<210> 45
<211> 321
<212> DNA
<213> *Mycobacterium tuberculosis*

<400> 45
gtggtgattc ggggagcggt ctacagggtc gacttcggcg atgcgaagcg agccacgag 60

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caacgcgggc ggcgctacgc cgtggtcatc agccccggct cgatgccgtg gagtgttagta 120
 accgtggtgc cgacgtcgac aagcgccaa cctgcggttt tccgaccaga gctggaaagtc 180
 atggaaacaa agacacggtt cctggtgat cagatccgga cgatccgt cgtctatgtg 240
 cacggcgatc cggtcgacta tctggaccgt gaccaaattgg ccaagggtgga acacgcccgtg 300
 gcacgatacc ttggctgtg a 321

<210> 46

<211> 109

<212> PRT

<213> *Bacillus halodurans*

<400> 46

Met	Pro	Val	Pro	Asp	Arg	Gly	Asn	Leu	Val	Tyr	Val	Asp	Phe	Asn	Pro
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Gln	Ser	Gly	His	Asp	Gln	Ala	Gly	Thr	Arg	Pro	Ala	Ile	Val	Leu	Ser
								20				25			30
Pro	Lys	Leu	Phe	Asn	Lys	Asn	Thr	Gly	Phe	Ala	Val	Val	Cys	Pro	Ile
								35				40			45
Thr	Arg	Gln	Gln	Lys	Gly	Tyr	Pro	Phe	Glu	Ile	Glu	Ile	Pro	Pro	Gly
						50			55			60			
Leu	Pro	Ile	Glu	Gly	Val	Ile	Leu	Thr	Asp	Gln	Val	Lys	Ser	Leu	Asp
						65			70			75			80
Trp	Arg	Ala	Arg	Asn	Phe	His	Ile	Lys	Gly	Gln	Ala	Pro	Glu	Glu	Thr
						85			90						95
Val	Thr	Asp	Cys	Leu	Gln	Leu	Ile	His	Thr	Phe	Leu	Ser			
						100						105			

<210> 47

<211> 120

<212> PRT

<213> *Staphylococcus epidermidis*

<400> 47

Met	Ile	Arg	Arg	Gly	Asp	Val	Tyr	Leu	Ala	Asp	Leu	Ser	Pro	Val	Gln
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Gly	Ser	Glu	Gln	Gly	Gly	Val	Arg	Pro	Val	Val	Ile	Ile	Gln	Asn	Asp
							20			25			30		
Thr	Gly	Asn	Lys	Tyr	Ser	Pro	Thr	Val	Ile	Val	Ala	Ala	Ile	Thr	Asp
							35			40			45		
Gly	Ile	Asn	Lys	Ala	Lys	Ile	Pro	Thr	His	Val	Glu	Ile	Glu	Lys	Lys
						50			55			60			
Lys	Tyr	Lys	Leu	Asp	Lys	Asp	Ser	Val	Ile	Leu	Glu	Gln	Ile	Arg	
						65			70			75			80
Thr	Leu	Asp	Lys	Lys	Arg	Leu	Lys	Glu	Lys	Leu	Thr	Phe	Leu	Ser	Glu
						85			90					95	
Ser	Lys	Met	Ile	Glu	Val	Asp	Asn	Ala	Leu	Asp	Ile	Ser	Leu	Gly	Leu
						100			105				110		
Asn	Asn	Phe	Asp	His	His	Lys	Ser								
						115			120						

<210> 48

<211> 136

<212> PRT

<213> *Staphylococcus aureus*

<400> 48

Met	Ile	Arg	Arg	Gly	Asp	Val	Tyr	Leu	Ala	Asp	Leu	Ser	Pro	Val	Gln
1										10					15
Gly	Ser	Glu	Gln	Gly	Gly	Val	Arg	Pro	Val	Val	Ile	Ile	Gln	Asn	Asp
							20			25			30		
Thr	Gly	Asn	Lys	Tyr	Ser	Pro	Thr	Val	Ile	Val	Ala	Ala	Ile	Thr	Gly
							35			40			45		
Arg	Ile	Asn	Lys	Ala	Lys	Ile	Pro	Thr	His	Val	Glu	Ile	Glu	Lys	Lys
						50			55			60			

Lys Tyr Lys Leu Asp Lys Asp Ser Val Ile Leu Leu Glu Gln Ile Arg
 65 70 75 80
 Thr Leu Asp Lys Lys Arg Leu Lys Glu Lys Leu Thr Tyr Leu Ser Asp
 85 90 95
 Asp Lys Met Lys Glu Val Asp Asn Ala Leu Met Ile Ser Leu Gly Leu
 100 105 110
 Asn Ala Val Ala Gln Pro Glu Lys Leu Gly Val Tyr Tyr Met Tyr Phe
 115 120 125
 Ser Glu Ile Asn Lys Ile Leu Ile
 130 135

<210> 49
<211> 116
<212> PRT
<213> *Bacillus subtilis*

<400> 49
Met Ile Val Lys Arg Gly Asp Val Tyr Phe Ala Asp Leu Ser Pro Val
 1 5 10 15
 Val Gly Ser Glu Gln Gly Gly Val Arg Pro Val Leu Val Ile Gln Asn
 20 25 30
 Asp Ile Gly Asn Arg Phe Ser Pro Thr Ala Ile Val Ala Ala Ile Thr
 35 40 45
 Ala Gln Ile Gln Lys Ala Lys Leu Pro Thr His Val Glu Ile Asp Ala
 50 55 60
 Lys Arg Tyr Gly Phe Glu Arg Asp Ser Val Ile Leu Leu Glu Gln Ile
 65 70 75 80
 Arg Thr Ile Asp Lys Gln Arg Leu Thr Asp Lys Ile Thr His Leu Asp
 85 90 95
 Asp Glu Met Met Asp Lys Val Asp Glu Ala Leu Gln Ile Ser Leu Ala
 100 105 110
 Leu Ile Asp Phe
 115

<210> 50
<211> 115
<212> PRT
<213> *Neisseria meningitidis*

<400> 50
Met Tyr Ile Pro Asp Lys Gly Asp Ile Phe His Leu Asn Phe Asp Pro
 1 5 10 15
 Ser Ser Gly Lys Glu Ile Lys Gly Gly Arg Phe Ala Leu Ala Leu Ser
 20 25 30
 Pro Lys Ala Phe Asn Arg Ala Thr Gly Leu Val Phe Ala Cys Pro Ile
 35 40 45
 Ser Gln Gly Asn Ala Ala Ala Ala Arg Ser Ser Gly Met Ile Ser Thr
 50 55 60
 Leu Leu Gly Ala Gly Thr Glu Thr Gln Gly Asn Val His Cys His Gln
 65 70 75 80
 Leu Lys Ser Leu Asp Trp Gln Ile Arg Lys Ala Ser Phe Lys Glu Thr
 85 90 95
 Val Pro Asp Tyr Val Leu Asp Asp Val Leu Ala Arg Ile Gly Ala Val
 100 105 110
 Leu Phe Asp
 115

<210> 51
<211> 121
<212> PRT
<213> Morganella morgani

<400> 51

Met	Arg	Arg	Arg	Leu	Val	Arg	Arg	Lys	Ser	Asp	Met	Glu	Arg	Gly	Glu
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Ile	Trp	Leu	Val	Ser	Leu	Asp	Pro	Thr	Ala	Gly	His	Glu	Gln	Gln	Gly
								20		25				30	
Thr	Arg	Pro	Val	Leu	Ile	Val	Thr	Pro	Ala	Ala	Phe	Asn	Arg	Val	Thr
								35		40			45		
Arg	Leu	Pro	Val	Val	Val	Pro	Val	Thr	Ser	Gly	Gly	Asn	Phe	Ala	Arg
								50		55		60			
Thr	Ala	Gly	Phe	Ala	Val	Ser	Leu	Asp	Gly	Ala	Gly	Ile	Arg	Thr	Thr
								65		70		75		80	
Gly	Val	Val	Arg	Cys	Asp	Gln	Pro	Arg	Thr	Ile	Asp	Met	Lys	Ala	Arg
								85		90			95		
Gly	Gly	Lys	Arg	Leu	Glu	Arg	Val	Pro	Glu	Thr	Ile	Met	Asp	Asp	Val
								100		105			110		
Leu	Gly	Arg	Leu	Ala	Thr	Ile	Leu	Thr							
								115		120					

<210> 52
<211> 118
<212> PRT
<213> Mycobacterium tuberculosis

<400> 52

Met	Met	Arg	Arg	Gly	Glu	Ile	Trp	Gln	Val	Asp	Leu	Asp	Pro	Ala	Arg
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Gly	Ser	Glu	Ala	Asn	Asn	Gln	Arg	Pro	Ala	Val	Val	Val	Ser	Asn	Asp
						20			25			30			
Arg	Ala	Asn	Ala	Thr	Ala	Thr	Arg	Leu	Gly	Arg	Gly	Val	Ile	Thr	Val
								35		40		45			
Val	Pro	Val	Thr	Ser	Asn	Ile	Ala	Lys	Val	Tyr	Pro	Phe	Gln	Val	Leu
								50		55		60			
Leu	Ser	Ala	Thr	Thr	Thr	Gly	Leu	Gln	Val	Asp	Cys	Lys	Ala	Gln	Ala
								65		70		75		80	
Glu	Gln	Ile	Arg	Ser	Ile	Ala	Thr	Glu	Arg	Leu	Leu	Arg	Pro	Ile	Gly
								85		90			95		
Arg	Val	Ser	Ala	Ala	Glu	Leu	Ala	Gln	Leu	Asp	Glu	Ala	Leu	Lys	Leu
								100		105			110		
His	Leu	Asp	Leu	Trp	Ser										
								115							

<210> 53
<211> 243
<212> DNA
<213> Deinococcus radiodurans

<400> 53

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atgacgagtc aaattcagaa atggggcaac agcctcgcbc tccgcattcc caaagctctg 60
gcgcagcagg tgggactgac gcagagttca gaagtggagc tgcttcttca ggacgggtcag 120
attgtcatcc ggcgcattcc tgctcggcag tacgatctcg ccgcgcgtct ggccgaaaatg 180
acacctgaaa atctgcatgg ggaaacagac tggggcgcac tggaaaggacg cgaggaatgg 240
taa
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<210> 54
<211> 246
<212> DNA
<213> *Bacillus halodurans*

<400> 54
gtgacactca tgactactat aaaaaagtgg gaaaatagtt tagctgttcg tattccgaac 60
cattatgcta aacatattaa cgttacgcaa ggatctgaaa ttgaactaag cttagggagt 120
gatcaaacga ttatTTaaa gcctaaaaaa agaaagccaa cattagagga attagtggca 180
aaaatcactc ctgaaaacag acataacgaa attgatttcg ggagaacagg aaaggaattg 240
ttgttaa 246

<210> 55
<211> 258
<212> DNA
<213> *E. coli* Plasmid R100

<400> 55
atgcatacca cccgactgaa gagggttggc ggctcagttt tgctgaccgt cccacggca 60
ctgctgaatg cgctgtctc gggcacagat aatgaagttt gcatggtcat tgataatggc 120
cggtctgattt ttgagccgta cagacgcccc caatattcac tggctgagct actggcacag 180
tgtatccga atgctgaat atcagctgaa gaacgagaat ggctggatgc accggcact 240
ggtcaggagg aaatctga 258

<210> 56
<211> 294
<212> DNA
<213> *E. coli* Plasmid R466b

<400> 56
atgttatatt taaatataac ttttatggag gaaaaaatgc ataccactcg actgaagaag 60
gttggcggct cagtcatgct gaccgtccca ccggcactgc tgaatgcgcgt gtcgctgggt 120
acagataatg aagtggcat ggtcattgtat aatggccggc tgattgtgga gccgcacaga 180
cgcccgcagt attcactggc tgagctgttgc acacagtgcg atccgaacgc taaaatctcg 240
gcagaagaac gtgaatggct ggatgcggc gcggctggtc aggaggaaat ctga 294

<210> 57
<211> 258
<212> DNA
<213> *Escherichia coli*

<400> 57
gtgcagatgc gtattaccat aaaaagatgg gggAACAGTG caggtatggc cattccaaat 60
atcgtaatga aagaacttaa cttacagccg gggcagagcg tggaaatgc ggtgagcaac 120
aaccaactga ttctgacacc catctccagg cgctactcgc ttgatgaact gctggcacag 180
tgtgacatga acgccgcgaa acttagcgag caggatgtct ggggtaaatc caccctgcg 240
ggtgacgaaa tatggtaa 258

<210> 58
<211> 255
<212> DNA
<213> *Pseudomonas putida*

<400> 58
atgcagatca agattcaaca gtggggcaac agcgccgcga tccgcttgcc cgccgcagta 60
ctcaaggaga tgcgcctcgg tgcggctcc accctgagcc ttgacacaac ggtgagacg 120
atggtgctca aaccgcgtca gtcgaaaccc aagtacaccc ttgaggaact gatggcccag 180
tgtgacctga gtgcacccgga gccagaggac atggccgact ggaatgccat gcgcccagt 240
ggcggtgaag tgtga 255

<210> 59
<211> 260
<212> DNA
<213> Photobacterium profundum

<400> 59
gtgcaatgag aactcagata agaaaagatcg gtaactcaact tggttcaatt attcctgcc 60
cttttattcg tcagcttcaa ctggcagagg ggcgcagaat tgatgtaaa acgggttgatg 120
aaaaaaattgt gatttagccaa attagaaaaaa tgaaaaaaacg tttcccatc agtgagcgtg 180
aattactaaag tggattggat gcacacactg ctcatgctga cgaactggtt gtaatttcta 240
cccaggagct aggcaataa 260

<210> 60
<211> 80
<212> PRT
<213> Deinococcus radiodurans

<400> 60
Met Thr Ser Gln Ile Gln Lys Trp Gly Asn Ser Leu Ala Leu Arg Ile
1 5 10 15
Pro Lys Ala Leu Ala Gln Gln Val Gly Leu Thr Gln Ser Ser Glu Val
20 25 30
Glu Leu Leu Leu Gln Asp Gly Gln Ile Val Ile Arg Pro Val Pro Ala
35 40 45
Arg Gln Tyr Asp Leu Ala Ala Leu Leu Ala Glu Met Thr Pro Glu Asn
50 55 60
Leu His Gly Glu Thr Asp Trp Gly Ala Leu Glu Gly Arg Glu Glu Trp
65 70 75 80

<210> 61
<211> 81
<212> PRT
<213> Bacillus halodurans

<400> 61
Met Thr Leu Met Thr Thr Ile Gln Lys Trp Gly Asn Ser Leu Ala Val
1 5 10 15
Arg Ile Pro Asn His Tyr Ala Lys His Ile Asn Val Thr Gln Gly Ser
20 25 30
Glu Ile Glu Leu Ser Leu Gly Ser Asp Gln Thr Ile Ile Leu Lys Pro
35 40 45
Lys Lys Arg Lys Pro Thr Leu Glu Glu Leu Val Ala Lys Ile Thr Pro
50 55 60
Glu Asn Arg His Asn Glu Ile Asp Phe Gly Arg Thr Gly Lys Glu Leu
65 70 75 80
Leu

<210> 62
<211> 85
<212> PRT
<213> E. coli PemI plasmid R100

<400> 62
Met His Thr Thr Arg Leu Lys Arg Val Gly Gly Ser Val Met Leu Thr
1 5 10 15
Val Pro Pro Ala Leu Leu Asn Ala Leu Ser Leu Gly Thr Asp Asn Glu
20 25 30
Val Gly Met Val Ile Asp Asn Gly Arg Leu Ile Val Glu Pro Tyr Arg
35 40 45
Arg Pro Gln Tyr Ser Leu Ala Glu Leu Leu Ala Gln Cys Asp Pro Asn
50 55 60
Ala Glu Ile Ser Ala Glu Glu Arg Glu Trp Leu Asp Ala Pro Ala Thr
65 70 75 80

Gly Gln Glu Glu Ile
85

<210> 63
<211> 97
<212> PRT
<213> E. coli PemI plasmid R466b

<400> 63
Met Leu Tyr Leu Asn Ile Thr Phe Met Glu Gly Lys Met His Thr Thr
1 5 10 15
Arg Leu Lys Lys Val Gly Gly Ser Val Met Leu Thr Val Pro Pro Ala
20 25 30
Leu Leu Asn Ala Leu Ser Leu Gly Thr Asp Asn Glu Val Gly Met Val
35 40 45
Ile Asp Asn Gly Arg Leu Ile Val Glu Pro His Arg Arg Pro Gln Tyr
50 55 60
Ser Leu Ala Glu Leu Leu Ala Gln Cys Asp Pro Asn Ala Glu Ile Ser
65 70 75 80
Ala Glu Glu Arg Glu Trp Leu Asp Ala Pro Ala Ala Gly Gln Glu Glu
85 90 95
Ile

<210> 64
<211> 85
<212> PRT
<213> Escherichia coli

<400> 64
Met Gln Met Arg Ile Thr Ile Lys Arg Trp Gly Asn Ser Ala Gly Met
1 5 10 15
Val Ile Pro Asn Ile Val Met Lys Glu Leu Asn Leu Gln Pro Gly Gln
20 25 30
Ser Val Glu Ala Gln Val Ser Asn Asn Gln Leu Ile Leu Thr Pro Ile
35 40 45
Ser Arg Arg Tyr Ser Leu Asp Glu Leu Leu Ala Gln Cys Asp Met Asn
50 55 60
Ala Ala Glu Leu Ser Glu Gln Asp Val Trp Gly Lys Ser Thr Pro Ala
65 70 75 80
Gly Asp Glu Ile Trp
85

<210> 65
<211> 84
<212> PRT
<213> Pseudomonas putida

<400> 65
Met Gln Ile Lys Ile Gln Gln Trp Gly Asn Ser Ala Ala Ile Arg Leu
1 5 10 15
Pro Ala Ala Val Leu Lys Gln Met Arg Leu Gly Val Gly Ser Thr Leu
20 25 30
Ser Leu Asp Thr Thr Gly Glu Thr Met Val Leu Lys Pro Val Arg Ser
35 40 45
Lys Pro Lys Tyr Thr Leu Glu Leu Met Ala Gln Cys Asp Leu Ser
50 55 60
Ala Pro Glu Pro Glu Asp Met Ala Asp Trp Asn Ala Met Arg Pro Val
65 70 75 80
Gly Arg Glu Val

<210> 66
<211> 85
<212> PRT
<213> Photobacterium profundum

<400> 66
Ala Met Arg Thr Gln Ile Arg Lys Ile Gly Asn Ser Leu Gly Ser Ile
1 5 10 15
Ile Pro Ala Thr Phe Ile Arg Gln Leu Glu Leu Ala Glu Gly Ala Glu
20 25 30
Ile Asp Val Lys Thr Val Asp Gly Lys Ile Val Ile Glu Pro Ile Arg
35 40 45
Lys Met Lys Lys Arg Phe Pro Phe Ser Glu Arg Glu Leu Leu Ser Gly
50 55 60
Leu Asp Ala His Thr Ala His Ala Asp Glu Leu Val Val Ile Ser Thr
65 70 75 80
Gln Glu Leu Gly Glu
85

<210> 67
<211> 228
<212> DNA
<213> Homo sapiens

<400> 67
atgggtccag catctgttcc gactacctgt tgcttaacc tggcgaaccc caaaaattccg 60
ctgcagcgcc tggaaagcta tcgcccgtatt acctctggca aatgcccgc aaaaaggcggtg 120
atctttaaaa ccaaactggc gaaagatatt tgcgccggatc cgaaaaaaaa atgggtgcag 180
gattctatga aatatctgga tcagaaatct ccgaccccgaa aaccgtaa 228

<210> 68
<211> 73
<212> PRT
<213> Homo sapiens

<400> 68
Gly Pro Ala Ser Pro Thr Thr Cys Cys Phe Asn Leu Ala Asn Arg Lys
1 5 10 15
Ile Pro Leu Gln Arg Leu Glu Ser Tyr Arg Arg Ile Thr Ser Gly Lys
20 25 30
Cys Pro Gln Lys Ala Val Ile Phe Lys Thr Lys Leu Ala Lys Asp Ile
35 40 45
Cys Ala Asp Pro Lys Lys Trp Val Gln Asp Ser Met Lys Tyr Leu
50 55 60
Asp Gln Lys Ser Pro Thr Pro Lys Pro
65 70

<210> 69
<211> 357
<212> DNA
<213> Mycobacterium tuberculosis

<400> 69
gtgatgcgcc gcggtgagat ttggcaggtc gatctcgacc ccgctcgagg tagcgaagcg 60
aacaaccaggc gccccggcggt cgtcgtcaggc aacgaccggg ccaacgcgcac cgccacgcgt 120
cttgggcgcg gcgtcatcac cgtcgccg gtgacgagca acatcgccaa ggtctatccg 180
tttcaggtgt tggcgccg caccactact ggtctccagg tcgactgc aaatcgccg agtttcagcc 240
gagcaaatca gatcgattgc taccgagccg ttgcctccggc caatcgccg agtttcagcc 300
cccgactttg cccagctcga tgaggcttg aaactgcata tcgacttatg gtcgttag 357

<210> 70
<211> 282
<212> DNA
<213> Mycobacterium tuberculosis

<400> 70
atgctgcgca gtgagatctg gcagggtcgac ctggatccgg cccgcggcag cgccggaaat 60
atgcggcgcc cagcgtaat tgtcagcaac gacagggcca acgctgcgc gatacgtctc 120
gaccgaggcg tggtgcgggt tgtccgggtt accagcaaca ccgaaaaggt ccccattcca 180
ggtgttggatcc cggcagcga gcgggtggcct ggccgtcgat tcgaaggcgc aggcccagca 240
ggtgttggatcc gtcgctgcgc aacgtctccc ctgccgagct ga 282

<210> 71
<211> 345
<212> DNA
<213> Mycobacterium tuberculosis

<400> 71
gtggtgatata gtcgtgccga gatctactgg gctgaccccg ggccgcacatc aggcagtcag 60
ccggcgaagc gcccgggt gctcgtaatc cagtcagatc cgtacaacgc aagtccgttt 120
gccactgtga tcgcagcggt gatcacgatc aatacggcgc tggcggaat gccccggcaac 180
gtgttcttgc cccgcgaccac aacgcgactg ccacgtgact cggtcgtaa cgtcacggcg 240
attgtcacgc tcaacaagac tgacccatc gaccgagttg gggagggtgc agcgagctt 300
atgcacgagg ttgaccgagg acttcgtcgatc gtactggacc tttga 345

<210> 72
<211> 309
<212> DNA
<213> Mycobacterium tuberculosis

<400> 72
atgcggcgccgt gtgaatttgtt gtttgcggcc acacctgggtt gtgacagacc agtacttgtc 60
cttaccagag atccgggtggc agaccgcac ggcgcgggtcg ttgtgggtgc cctaaccgc 120
accggccggag gcttgggtgc ggaattggag ctcacggccg tcgaaaaccg tggccgagc 180
gactgcgtcg tcaacttcga caacattcat acgttgcac gcaccgcatt ccgacggcg 240
atcaccggcgttcc tggccggcgc ccgcctgcac gaaggctgtc aaacactccg ggcgagc 300
gggtgttga 309

<210> 73
<211> 330
<212> DNA
<213> Mycobacterium tuberculosis

<400> 73
gtgaccgcac ttccggcgcc cggagagggtt tggtggtgtt agatggctga gatcggtcg 60
cgaccagtcg tcgtgtgtc ggcgcgtatc ggcgtccctc ggctgcgacg cgcacttgtc 120
gcgcctgtca ccacgaccat ccgagggtca gccagtgagg ttgttcttgc accccgggttcc 180
gaccggatcc cgcgcgttc cgcgggttaat ttggacttcg tgcggatgtt ctcgggtcg 240
gtattgggtga atccgggttgg ccgcctgcac gacatccggta tgcgcgcatt ctgcacggcc 300
ctcgaggtcg ccgtcgatatttgcatgtga 330

<210> 74
<211> 118
<212> PRT
<213> Mycobacterium tuberculosis

<400> 74
Met Met Arg Arg Gly Glu Ile Trp Gln Val Asp Leu Asp Pro Ala Arg
1 5 10 15
Gly Ser Glu Ala Asn Asn Gln Arg Pro Ala Val Val Val Ser Asn Asp
20 25 30
Arg Ala Asn Ala Thr Ala Thr Arg Leu Gly Arg Gly Val Ile Thr Val
35 40 45
Val Pro Val Thr Ser Asn Ile Ala Lys Val Tyr Pro Phe Gln Val Leu
50 55 60

Leu Ser Ala Thr Thr Gly Leu Gln Val Asp Cys Lys Ala Gln Ala
 65 70 75 80
 Glu Gln Ile Arg Ser Ile Ala Thr Glu Arg Leu Leu Arg Pro Ile Gly
 85 90 95
 Arg Val Ser Ala Ala Glu Leu Ala Gln Leu Asp Glu Ala Leu Lys Leu
 100 105 110
 His Leu Asp Leu Trp Ser
 115

<210> 75

<211> 93

<212> PRT

<213> Mycobacterium tuberculosis

<400> 75

Met Leu Arg Gly Glu Ile Trp Gln Val Asp Leu Asp Pro Ala Arg Gly
 1 5 10 15
 Ser Ala Ala Asn Met Arg Arg Pro Ala Val Ile Val Ser Asn Asp Arg
 20 25 30
 Ala Asn Ala Ala Ala Ile Arg Leu Asp Arg Gly Val Val Pro Val Val
 35 40 45
 Pro Val Thr Ser Asn Thr Glu Lys Val Pro Ile Pro Gly Val Val Ala
 50 55 60
 Gly Ser Glu Arg Trp Pro Gly Arg Arg Phe Glu Gly Ala Gly Pro Ala
 65 70 75 80
 Gly Trp Ile Arg Arg Cys Ala Thr Ser Pro Leu Pro Ser
 85 90

<210> 76

<211> 114

<212> PRT

<213> Mycobacterium tuberculosis

<400> 76

Met Val Ile Ser Arg Ala Glu Ile Tyr Trp Ala Asp Leu Gly Pro Pro
 1 5 10 15
 Ser Gly Ser Gln Pro Ala Lys Arg Arg Pro Val Leu Val Ile Gln Ser
 20 25 30
 Asp Pro Tyr Asn Ala Ser Arg Leu Ala Thr Val Ile Ala Ala Val Ile
 35 40 45
 Thr Ser Asn Thr Ala Leu Ala Ala Met Pro Gly Asn Val Phe Leu Pro
 50 55 60
 Ala Thr Thr Thr Arg Leu Pro Arg Asp Ser Val Val Asn Val Thr Ala
 65 70 75 80
 Ile Val Thr Leu Asn Lys Thr Asp Leu Thr Asp Arg Val Gly Glu Val
 85 90 95
 Pro Ala Ser Leu Met His Glu Val Asp Arg Gly Leu Arg Arg Val Leu
 100 105 110
 Asp Leu

<210> 77

<211> 102

<212> PRT

<213> Mycobacterium tuberculosis

<400> 77

Met Arg Arg Gly Glu Leu Trp Phe Ala Ala Thr Pro Gly Gly Asp Arg
 1 5 10 15
 Pro Val Leu Val Leu Thr Arg Asp Pro Val Ala Asp Arg Ile Gly Ala
 20 25 30
 Val Val Val Val Ala Leu Thr Arg Thr Arg Arg Gly Leu Val Ser Glu
 35 40 45

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Leu Glu Leu Thr Ala Val Glu Asn Arg Val Pro Ser Asp Cys Val Val
 50 55 60
 Asn Phe Asp Asn Ile His Thr Leu Pro Arg Thr Ala Phe Arg Arg Arg
 65 70 75 80
 Ile Thr Arg Leu Ser Pro Ala Arg Leu His Glu Ala Cys Gln Thr Leu
 85 90 95
 Arg Ala Ser Thr Gly Cys
 100

<210> 78
<211> 109
<212> PRT
<213> Mycobacterium tuberculosis

<400> 78
 Met Thr Ala Leu Pro Ala Arg Gly Glu Val Trp Trp Cys Glu Met Ala
 1 5 10 15
 Glu Ile Gly Arg Arg Pro Val Val Val Leu Ser Arg Asp Ala Ala Ile
 20 25 30
 Pro Arg Leu Arg Arg Ala Leu Val Ala Pro Cys Thr Thr Ile Arg
 35 40 45
 Gly Leu Ala Ser Glu Val Val Leu Glu Pro Gly Ser Asp Pro Ile Pro
 50 55 60
 Arg Arg Ser Ala Val Asn Leu Asp Ser Val Glu Ser Val Ser Val Ala
 65 70 75 80
 Val Leu Val Asn Arg Leu Gly Arg Leu Ala Asp Ile Arg Met Arg Ala
 85 90 95
 Ile Cys Thr Ala Leu Glu Val Ala Val Asp Cys Ser Arg
 100 105

<210> 79
<211> 351
<212> DNA
<213> Bacillus anthracis

<400> 79
 ttgattgtaa aacgcggcga cgtgtatTTT gcagacCTT ccccAGTTt tggttcttag 60
 caaggagggt ttcgtccggT tcttgcatt caaaATgaca tcggAAatcg ttttagtcca 120
 acggTgattg tagcggctat tactgcacag attcaaaaag cgaaattacc cactcatgtg 180
 gaaattgatg cgaaaaagta cggTTTgag agagattctg ttatTTTact tgagcagatt 240
 cgaacaatcg ataagcagcg cttaacgac aaaatcactc acttagatga agtgatgtg 300
 attcgtgtat atgaagcgct acaaattagt ttaggactaa tagattttta a 351

<210> 80
<211> 116
<212> PRT
<213> Bacillus anthracis

<400> 80
 Met Ile Val Lys Arg Gly Asp Val Tyr Phe Ala Asp Leu Ser Pro Val
 1 5 10 15
 Val Gly Ser Glu Gln Gly Gly Val Arg Pro Val Leu Val Ile Gln Asn
 20 25 30
 Asp Ile Gly Asn Arg Phe Ser Pro Thr Val Ile Val Ala Ala Ile Thr
 35 40 45
 Ala Gln Ile Gln Lys Ala Lys Leu Pro Thr His Val Glu Ile Asp Ala
 50 55 60
 Lys Lys Tyr Gly Phe Glu Arg Asp Ser Val Ile Leu Leu Glu Gln Ile
 65 70 75 80
 Arg Thr Ile Asp Lys Gln Arg Leu Thr Asp Lys Ile Thr His Leu Asp
 85 90 95
 Glu Val Met Met Ile Arg Val Asp Glu Ala Leu Gln Ile Ser Leu Gly
 100 105 110

Leu Ile Asp Phe
115

<210> 81
<211> 348
<212> DNA
<213> *Pseudomonas putida*

<400> 81
gtgaaacggt tgaaaattcgc caggggtgat attgttcgcg tcaacctgga cccaacagtc 60
ggcgaaaaac agcaggggctc cggccgacct gcactggtag ttactccggc tgcgttcaat 120
gcttcaggcc tggctgtat catccccatc actcaaggtg gggatttcgc gaggcatgca 180
ggtttcgctg tcacgctcag cggtgccggc acggagactc aggggtgat gctttgcaac 240
caggtgcgca cagtcgaccc tgaagcacga tttgccaagc gcatagagtc ggtgcctgaa 300
gctgtatcc tggatgcact ggcgcgtgtg caaaccttat tcgattaa 348

<210> 82
<211> 345
<212> DNA
<213> *Mycobacterium celatum*

<400> 82
tgaattgctc tgacggaacg cggcgacatc tacatcggtt cgcttgaccc gacgtcggga 60
catgagcaga gcggcacgca cccagtttg gtctgtccc cgggcgcgtt taatgcctg 120
acgaaaacac cggctgtct acctataaca cggcgccggc actttggccg aacggcagg 180
ttcgctgtct cgctgaccga tgcgggtact cgacccggc gctaatacg ctgcgatcag 240
cctcgctcga ttgatatccg cggccgtaaa ggccgcaagg ttgaacgtgt gccgtctggg 300
gttcttgacg aagcggtggc caagctcgcc acgatcttga cttga 345

<210> 83
<211> 366
<212> DNA
<213> *Shigella flexneri* 2a str. 301

<400> 83
atggtaaagg cacggacgcc acatcggtt gagatctggg attttaaccc tgatccgggtt 60
ggcgccatg aacttcaggg gcccattat tgcattgtgg taacggacaa aaaactcaac 120
aatgtttaa aagttgctat gtgctgccc attcaacag gggcaaattgc agcacgttcc 180
acaggggtga cggtaacgt cctcccccgt gatacgaaa cggtaaccc gcatggcggtt 240
gtactttgtc accagctaaa agccgtcgat cttattgccc gtggcgctaa atttcataacc 300
gttgcgcgtg aaaaattgtat tagtgaagtt atcagtaaac tggtaattt aatcgaccacca 360
caataaa 366

<210> 84
<211> 351
<212> DNA
<213> *E. coli*

<400> 84
atggtaaaga aaagtgaatt tgaacgggaa gacattgtgc tggttggctt tgatccagca 60
agcggccatg aacagcaagg tgctggtcga cctgcgcctt tgctctccgt tcaaggcttt 120
aatcaactgg gaatgacgct ggtggccccc attacgcagg gcggaaattt tgcccggttat 180
ggccgattta gcgttccctt acattgcgaa gaaggcgatg tgcacggcgt ggtgctgggt 240
aatcaggtgc ggtatgtga tctacacgcc cggctggcaa agcgtattgg tctggctgca 300
gatgaggtgg tggaaagaggc gttattacgc ttgcaggcgg tggtaataa a 351

<210> 85
<211> 115
<212> PRT
<213> *Pseudomonas putida*

<400> 85
Met Lys Arg Leu Lys Phe Ala Arg Gly Asp Ile Val Arg Val Asn Leu
1 5 10 15

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Asp Pro Thr Val Gly Arg Glu Gln Gln Gly Ser Gly Arg Pro Ala Leu
 20 25 30
 Val Leu Thr Pro Ala Ala Phe Asn Ala Ser Gly Leu Ala Val Ile Ile
 35 40 45
 Pro Ile Thr Gln Gly Gly Asp Phe Ala Arg His Ala Gly Phe Ala Val
 50 55 60
 Thr Leu Ser Gly Ala Gly Thr Gln Thr Gln Gly Val Met Leu Cys Asn
 65 70 75 80
 Gln Val Arg Thr Val Asp Leu Glu Ala Arg Phe Ala Lys Arg Ile Glu
 85 90 95
 Ser Val Pro Glu Ala Val Ile Leu Asp Ala Leu Ala Arg Val Gln Thr
 100 105 110
 Leu Phe Asp
 115

<210> 86
<211> 111
<212> PRT
<213> *Mycobacterium celatum*

<400> 86
Met Thr Glu Arg Gly Asp Ile Tyr Ile Val Ser Leu Asp Pro Thr Ser
 1 5 10 15
 Gly His Glu Gln Ser Gly Thr Arg Pro Val Leu Val Val Ser Pro Gly
 20 25 30
 Ala Phe Asn Arg Leu Thr Lys Thr Pro Val Val Leu Pro Ile Thr Arg
 35 40 45
 Gly Gly Asn Phe Ala Arg Thr Ala Gly Phe Ala Val Ser Leu Thr Asp
 50 55 60
 Ala Gly Thr Arg Thr Ala Gly Val Ile Arg Cys Asp Gln Pro Arg Ser
 65 70 75 80
 Ile Asp Ile Arg Ala Arg Lys Gly Arg Lys Val Glu Arg Val Pro Ser
 85 90 95
 Gly Val Leu Asp Glu Ala Leu Ala Lys Leu Ala Thr Ile Leu Thr
 100 105 110

<210> 87
<211> 121
<212> PRT
<213> *Shigella flexneri* 2a str. 301

<400> 87
Met Val Lys Ala Arg Thr Pro His Arg Gly Glu Ile Trp Tyr Phe Asn
 1 5 10 15
 Pro Asp Pro Val Ala Gly His Glu Leu Gln Gly Pro His Tyr Cys Ile
 20 25 30
 Val Val Thr Asp Lys Lys Leu Asn Asn Val Leu Lys Val Ala Met Cys
 35 40 45
 Cys Pro Ile Ser Thr Gly Ala Asn Ala Ala Arg Ser Thr Gly Val Thr
 50 55 60
 Val Asn Val Leu Pro Arg Asp Thr Gln Thr Gly Asn Leu His Gly Val
 65 70 75 80
 Val Leu Cys His Gln Leu Lys Ala Val Asp Leu Ile Ala Arg Gly Ala
 85 90 95
 Lys Phe His Thr Val Ala Asp Glu Lys Leu Ile Ser Glu Val Ile Ser
 100 105 110
 Lys Leu Val Asn Leu Ile Asp Pro Gln
 115 120

<210> 88
<211> 116
<212> PRT
<213> E. coli

<400> 88
Met Val Lys Lys Ser Glu Phe Glu Arg Gly Asp Ile Val Leu Val Gly
1 5 10 15
Phe Asp Pro Ala Ser Gly His Glu Gln Gln Gly Ala Gly Arg Pro Ala
20 25 30
Leu Val Leu Ser Val Gln Ala Phe Asn Gln Leu Gly Met Thr Leu Val
35 40 45
Ala Pro Ile Thr Gln Gly Gly Asn Phe Ala Arg Tyr Ala Gly Phe Ser
50 55 60
Val Pro Leu His Cys Glu Glu Gly Asp Val His Gly Val Val Leu Val
65 70 75 80
Asn Gln Val Arg Met Met Asp Leu His Ala Arg Leu Ala Lys Arg Ile
85 90 95
Gly Leu Ala Ala Asp Glu Val Val Glu Glu Ala Leu Leu Arg Leu Gln
100 105 110
Ala Val Val Glu
115

<210> 89
<211> 17
<212> RNA
<213> Artificial Sequence

<220>
<223> mRNA transcript

<400> 89
aatgatgaca ctggaag

17

<210> 90
<211> 17
<212> RNA
<213> Artificial Sequence

<220>
<223> mRNA transcript

<400> 90
gtcggttgaca ttgatgg

17

<210> 91
<211> 17
<212> RNA
<213> Artificial Sequence

<220>
<223> mRNA transcript

<400> 91
atctcgaaca cgcagcc

17

<210> 92
<211> 17
<212> RNA
<213> Artificial Sequence

<220>
<223> mRNA transcript

<400> 92
tcgttttaca cccttga

17